NEVADA HIGHWAYS 1967 & 1968

Biennial Supplement

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LOOKING BACK

During the past two fiscal years, the Nevada Highway Department underwent one of its most crucial periods in recent Department history. Despite almost overwhelming problems in financing, staffing, and highway safety, the agency made remarkable progress in its continuing program of providing Nevada with the best highway system possible.

As the biennium closed on June 30, 1968, highway officials looked back on achievements that rose above such major obstacles as cut-backs in Federal funds, loss of key administrators, shortage of engineers, and growing demands for improved service and safety. In the two years, the Highway Department awarded 55 contracts costing $38.8 million. During the same period 290 miles of asphalt and concrete highway was completed and construction was begun on another 86 miles of State roadway. Nearly $90 million was spent on construction, maintenance, and other engineering activities. A high level of activity was maintained despite a reduction in employee strength. When the biennial period opened there were 1419 personnel, and when it closed there were 1394.

It became evident almost as soon as the biennial period began that serious financial problems faced the Department in meeting the needs of the motoring public. Federal allocations of highway funds were far short of requirements for completion of the Interstate Freeway system by 1972, or for badly needed improvements to the primary and secondary systems. The $20 million normally received for the Interstate, the $5 million for the primary, and the $3.3 million for the secondary were hardly keeping the program at a workable level let alone providing for expansion of the secondary system and immediate major changes in the primary network.

Adding to the dilema was mounting Federal pressure to comply with newly developed and more costly highway design safety standards for flatter fill slopes, broader cut slopes, extended culverts, guard rail, shallower and wider medians, and relocation of highway signing. Many projects had to be redesigned before they could be let for contract.

However, optimistically the Department proceeded with planning its 1967 and 1968 work programs. Over $100 million in construction and engineering was scheduled.

Unfortunately, the Federal Highway Trust Fund was in financial trouble. In 1967 less than $28 million was allocated for all Federal-aid highway projects in Nevada. The Fund balance became so low that in January 1968 a $10 million reduction occurred in the anticipated allocation for this year.

The expected $30 million for the calendar year had been cut to $20 million. By June 1968 most of the cut had been restored, but contract scheduling was completely disrupted since there had been no indication given as to the availability of funds after January 1, 1969.

Despite these temporary set-backs, major progress was made in several important aspects of the highway program: urban transportation; new highway safety requirements; computor programming; engineering specifications and procedures; employee and public relations; right-of-way acquisition; materials research; training; traffic studies; and administration.

For the first time in Department history, a full-time program of urban transportation planning was undertaken. Engineering efforts were focused on updating design concepts for improved motoring safety on roadways already in use and those slated for construction. Over $3 million was spent or programmed for expenditure on safety projects. More complex highway design increased the demand for electronic computor assistance which resulted in the installation of new equipment and new data processing systems. Changes in management concepts brought about publication of new engineering and administrative procedural manuals. Research by construction, testing and design engineers resulted in development of improved techniques and equipment for building highways. Despite a fluctuating financial situation, the Highway Department made the 1967 and 1968 fiscal years a biennium of progress.

ADMINISTRATION

Administration of the Highway Department was characterized by change as much as other aspects of agency activity. In addition to reorganization within some highway divisions, the Department underwent several major personnel changes in key administrative positions. At the same time, new management concepts were adopted and new procedures developed.

Having most effect on Department policy and direction was the appointment of a new State Highway Engineer and two deputies as the biennial period opened. On January 1, 1967, elections brought a dramatic change to the State Highway Board as Governor Laxalt became chairman and State Controller Wilson McGowan a new director.

Under the new administration, a new assistant deputy for field operations was appointed, and the former Administrative Engineer elevated to Administrator for Engineering and Management Services. Several other new positions were established as additional emphasis was given the management aspect of highway activity: Urban Project Engineer, Condemnation Coordinator, Assistant District Engineers for Ely and Tonopah districts, and a second Assistant District Engineer for Elko.

Promotions, transfers, and retirements brought new faces into many other key agency positions. Appointments were made for the assistant deputy for design, for the Construction Engineer and his two assistants, for an Assistant Maintenance Engineer, for Chief Bridge Engineer and his assistant, for Chief Road Engineer and his assistants for Interstate and Urban design, for Chief Testing and Materials Engineer, for the Traffic Engineer, and for District Engineers in Ely, Elko, and Winnemucca.

In the non-engineering administrative and services areas, division status was established for industrial relations, data processing, administrative services, fiscal management, project management, accounting, and purchasing and stores.

Decentralization and regional assignment of responsibilities further modified Department operations. Assistants to the Construction Engineer were assigned the responsibility of supervising roadbuilding on a district basis: one for districts 2, 3, and 4: and one for districts 1, 5, and 6. Additional right-of-way services were established in a Reno branch office comparable to those previously set up in Las Vegas. District testing laboratories were further expanded at Elko and Las Vegas. Utility inspectors were permanently assigned to each district in which highway contracts were active. New public information officers were given responsibility for district programs with one assigned to northern Nevada and the other to southern.

With greater emphasis on management improvement, the Department initiated special training courses for middle-level supervisors. At the same time, district maintenance superintendents were given management training through participation in a week-long maintenance academy conducted by the California Division of Highways.

New administrative regulations were developed and adopted, and an administrative policy manual published. Staff meetings at various Department levels were initiated to improve communication and agency efficiency. Mail and files was reorganized and a supervisor appointed. Safety and audio-visual production joined training and personnel as part of the newly formed industrial relations division.

FINANCE

As was anticipated in the 1965–66 Biennial Report, severe changes in Federal-aid did occur during the 1967–68 biennial period. In January 1968 a $10 million reduction in anticipated revenue from the Highway Trust Fund occurred, and there were indications as the biennium closed in June 1968 that a further hold on Federal-aid might be expected.

Although most of the federal cutback in early 1968 was restored by June of that year, it left the Department months behind in its schedule of contracts. At the end of the fiscal year, the shortage of funds reduced construction activity to its lowest point in five years. Nevada received less than $25 million compared to the more than $42 million received in 1967.

More important was the effect this sudden change had on budgeting and project scheduling. The Department had carefully spaced the letting of contracts to assure an even expenditure of highway funds throughout the entire 12-month period, based on an anticipated allocation of some $30 million. When the cutback occurred in January 1968, drastic changes had to be made in jobs slated for contract in the ensuing six-months. At the same time no definite information had been received as to Federal-aid allocations for the 1969 fiscal year.

INCOME

FEDERAL AID
$67,006,266.00

MOTOR FUEL TAXES
$24,559,300.05

COMMON CARRIER FEES
$6,757,537.47

AUTO REGISTRATIONS
$6,483,185.65

DRIVER'S LICENSE FEES
$550,703.27

MISCELLANEOUS ACCOUNTS RECEIVABLE
$1,894,700.36

EXPENSES

CONSTRUCTION
$53,283,284.99

MAINTENANCE
$11,718,637.30

SURVEYS, PLANS, DESIGN & RIGHT OF WAY
$22,513,000.69

ADMINISTRATION
$3,607,496.74

EQUIPMENT & PLANTS
$1,652,143.09

ACCOUNTS RECEIVABLE
$1,313,773.28

INFORMATION
$623,174.57

RESEARCH & INVESTIGATION
$1,762,116.92

PLANNING

Planning activities and responsibilities continued to expand during the past two fiscal years. New methods of obtaining information were developed and organizational changes made to improve the operation of the division.

As during past bienniums, planning survey continued such activities as road inventory, road life studies, traffic surveys, special studies, mapping, geodesy, photogrammetry, planning data processing, flight operations, and urban transportation planning.

The third cycle of statewide road and street inventory was continued with about 4000 miles of roadway rated during each of the two years of the biennial period. Detailed studies were made as to condition, safety, and motorist service. The reinventory is necessary on a continuing basis to keep up with changes occurring in the street and highway systems. In the past seven years street mileage jumped from 880 miles to 1340. Updated information on state-interest roads also provides a guide and assists in the assignment of priorities for construction, reconstruction, and maintenance projects.

Short and long range needs reports for highway planning are based on such research. In addition to providing Federal agencies with required information, these inventories make possible systematic programming of projects in keeping with available and anticipated highway revenues.

The mapping (cartographic) section became a major producer of visual aids and graphic arts materials as well as maps. To accomplish this while maintaining the same personnel level, the section acquired special type-setting and composing equipment. Mapping publications included revised editions of the detailed State highway map, section maps for Clark County, traffic flow maps for 13 of the 17 counties, and State traffic flow maps. In addition, annual traffic report maps were prepared along with an atlas of maps for the Truckee Meadows Transportation Study. Work also was started on special maps for the Las Vegas Valley Transportation Study which will combine aerial photographs and regular mapping techniques.

Continuing the program of acquiring current traffic data, the division maintained 41 sites at key locations throughout the State for continual counts. Supplementing this were periodic counts taken at 1800 other locations. A traffic inventory of rural roads and city streets was completed in Elko and White Pine counties and begun in Clark County as part of a periodic program for all counties in the State.

Activity of the special studies section continued to increase. Along with its previous programs of preparing economic studies for pending highway construction, traffic speed surveys, and truck weight checks, was added the research responsibility for the new Highway Safety Act. An inventory of sites for safety improvement projects was developed; highway accident analysis was initiated; and a course in traffic engineering was prepared and presented for Highway Patrol Academy training. The section pioneered the use of closed-circuit television for checking maneuverability of overlength trucks on the State's highways. From this study will be devised the new regulations for administering the Truck Length Law enacted by the 1967 Legislature.

As the 1965-66 biennium closed, an urban transportation section was established. Since that time, considerable progress has been made in obtaining basic data for transportation planning in the Truckee Meadows and Las Vegas Valley areas. Studies were initiated and a preliminary report completed for Truckee Meadows. The final report for the area is slated for publication in 1969. The Vegas Valley study is underway and also scheduled for report publication in 1969.

Traffic information forms the basis for highway planning. In addition to those taken automatically at sites throughout Nevada, manual surveys are periodically made for checking types of vehicles using the highways.

Where motorists go and why is of prime importance to the Highway Department. Interviews with visitors to this State are conducted to obtain basic information on traveling habits.

Traffic and pedestrian safety is a major concern of highway designers and builders. A vital activity and responsibility of planning survey is the design and installation of safety devices.

As the State's official mapping agency, the Department provides maps to private individuals and organizations, and to public agencies. For some areas of Nevada, these are the only maps published.

Greatly expanded in the past two years has been the production of graphic arts. Captions, headlines, line-drawings and layouts are being made for nearly every division of the agency.

Explosive growth of metropolitan traffic problems in Las Vegas and Reno has brought the focus of attention to urban transportation planning. Comprehensive studies have been undertaken in both urban areas.

DESIGN

Despite the unpredictable nature of federal funds, the Department's roadway design division worked at full capacity to prepare plans for more than 100 projects.

Change was the keynote for highway design during the past two years. The most extensive change in design standards in over a decade occurred as the result of the new national highway safety program. Designers were faced with the challenge of providing the safest possible roadways while retaining maximum economy in construction costs.

These new concepts and the growing complexity of highway engineering required organizational changes. At the same time, personnel levels were held down to reduce operational costs during the unsettled Federal-aid situation. Despite these problems during the biennium, the road design division completed construction plans for 52 contracts valued at $37,680,000; and bridge (structural) design finished plans for 155 structures, 52 of which were let for contract.

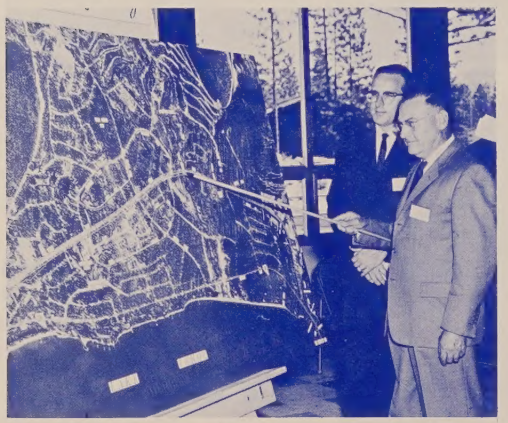
A new section for hydraulics and hydrology was established to research and develop improved drainage techniques. With the increased use of electronic data processing, two engineers were assigned to this activity and trained in programming and computor operation.

Major emphasis was given to highway beautification as well as highway safety. Landscaping was organized as a separate section. Over $1.4 million was spent on roadside rests and planting projects. The first complete facilities, including rest

Engineers joined with the agency's audio-visual producer to construct a scale model of the pending Interstate 80 bridge and tunnel project through Carlin Canyon west of Elko.

Errors in design are minimized through field review. Designers, engineers from the district involved, and federal area engineers complete an on-site check of plans for each job.

Electronic data processing is continuing to reduce the time required for design computations, allowing the Department to increase its work output without increasing its personnel.



A basic aspect of highway planning and design is the public hearing. Senior designers play a vital role in explaining the agency's proposal to affected businessmen and home owners.

rooms as well as tables, grills, litter receptacles, and landscaping were opened to use in Minden, Yerington, Hawthorne, and Boulder City. Similar and more elaborate facilities were being built on Interstate 80 and Interstate 15 as the biennium closed. The first major highway landscaping project on the Interstate was let for contract in December 1967.

Design projects reflected the increased concern with traffic safety as a total of $329,-165 in highway lighting and signal systems were planned and let for contract. These 17 contracts ranged from the 3-way signal in Wells costing $495 to the $92,645 spent on a complex, integrated signal system on U.S. 40 in Reno. Many of the construction projects also involved safety improvements; from the installation of left-turn storage lanes on U.S. 395 north of Minden to complete four-lane reconstruction of U.S. 50 at Lake Tahoe.

Although more time and funds were involved this biennial period than in past ones for these new programs, little additional Federal money was made available. Well before the end of the biennium, allocations of Federal general fund money for beautification projects had been used and there was no indication of future appropriations. Lack of funds was equally acute for safety improvements. Changes that were made had to be financed with State highway maintenance funds or from the already limited Federal-aid for normal roadway construction.

Imaginative design has become the rule rather than the exception in the plan development for highway structures. The bridge division finished plans for 155 structures during the biennium.

LEGAL
RIGHT-OF-WAY
UTILITIES

Disposing of property improvements such as houses, fencing, and business buildings is normally handled by public auction. These are held throughout the State by a special section of right-of-way.

Right-of-way engineering is the key to successful acquisition. Both comprehensive research and accurate engineering drawing are needed to prepare the hundreds of property maps used by the division.

Before any contract is let, removal or installation of facilities for power, water, telephone, and drainage are normally completed. Utility adjustments can be a major part of the project.

With real estate values changing throughout the State, appraisal of right-of-way has become the most difficult aspect of property acquisition. Keeping trained appraisers has become an equal problem.

Relocation of businesses and families affected by highway construction is an unpublicized but important facet of right-of-way acquisition. The law provides for payment and assistance for such moves.

Improvements in organization and procedures highlighted activity during the biennial period for the right-of-way and utilities divisions. Although reductions in personnel occurred, more effective use of employees and equipment made possible major progress in key property acquisition programs.

Emphasis in the past two years was given programs for relocation assistance, public information, staff training, data processing and automation, and improved compliance with State and Federal regulations. Closer working relationships were developed with the location, design, and legal divisions enabling property acquisition to proceed in a more efficient manner.

To better coordinate the various activities involved in the right-of-way program, property management was transferred to this division from utilities. This responsibility encompasses the leasing of homes, apartments or businesses on property acquired but not yet cleared for construction. It also involves the sale or other disposal of excess property.

One outstanding development made during the biennium was the establishment of a Market Sales Data Bank. On a cooperative basis between the Highway Department and other public and private agencies concerned with property transactions, a current computorized file on property sales information was developed. All available factual information on sales is sent to the Department by cooperating agencies and organized and stored by data processing for future reports and reference. This system is expected to save hundreds of manhours and provide the latest and most accurate information for property appraisals.

Acquisitions for the past two years totaled 446 parcels containing 2,054 acres costing $13,065,000. Most important of the transactions was the long-awaited settlement of the Union Pacific property negotiations in Las Vegas. After 5 weeks in court, a verdict favorable to the Department awarded the railroad $3.9 million for the 93 acres of land involved in the construction of Interstate 15 and the Downtown Expressway. The precedent-setting trial involved the largest land condemnation suit for Interstate construction in the nation. Railroad estimates of value ran as high as $7,042,000.

The complexity of utility and railroad adjustments needed for highway construction continued to make new demands on the utility division. It operated from highway headquarters in Carson City as well as from field offices in Reno, Las Vegas, Winnemucca, and Elko. A large share of its personnel were engaged in field inspection of utility installations and adjustments. Each highway district in which regular construction activity occurred had assigned to it on a full-time basis at least one utility inspector. Adjustments and acquisitions totaled some $7 million during the biennium.

Along with utility and railroad adjustments, it became a major responsibility of utilities to clear newly acquired right-of-way of all outdoor advertising. Sign surveys were conducted and numerous written and personal contacts made with sign owners.

Greatest expansion in the Department occurred in the legal division where activity required a 70 percent increase in personnel from the previous biennial period. Over 60 condemnation cases were filed in the two years. In addition the legal staff handled all claims against persons who negligently damaged highway property, and an ever-increasing number of civil suits against the agency for personal injury and property damage arising out of highway accidents.

Approximately 250 legal opinions, both written and oral, were provided by staff action during the biennium, as well as numerous contracts, resolutions, agreements with public and private agencies and individuals, and such legal forms as deeds affidavits, easements and other documents. Several bills concerning the Department also were prepared for submission to the 1967 legislature.

CONSTRUCTION

Attention during the biennial period was focused on improving urban highway facilities. A great bulk of the activity occurred in the Las Vegas area where traffic growth has been phenomenal. Pictured is the reconstruction and widening of Sahara Avenue east of the Strip.

A beautiful new segment of Interstate 80 was opened to traffic shortly after the biennium closed. Seen is the new freeway from Lawton's Hot Springs to Keystone Avenue in Reno. This job completed the Interstate from the California line to the Biggest Little City in the World.

Construction, as most other engineering activities of the Highway Department, was greatly affected by the abrupt changes in the status of Federal funds. As the biennium closed, field crews were at their lowest level since 1962. However, important progress was made in upgrading construction quality and procedures, and in completing or placing under contract much needed additions to the State highway system.

In two years, 55 contracts were awarded for construction of 148 miles of highway improvement. Awards totaling more than $38 million were made. During the same period 184 miles of new construction and 106 miles of reconstruction were completed. At the close of the biennium 86 miles were still under contract.

Major achievements during the two years included completion of an urban section of the Interstate Freeway in Las Vegas; of the State's largest contract to date, the $6 million job on Interstate 80 in eastern Nevada; the longest and most costly secondary project yet undertaken, the relocation of U.S. 93 in Clark and Lincoln counties; the 60-mile relocation of U.S. 50 in central Nevada; four-lane reconstruction of Sahara Avenue in Las Vegas and U.S. 50 at Lake Tahoe.

Control of materials and results continued as a primary concern of the division. Increased supervision and responsibility

was established at the district and project level. To assist in this, district laboratories were expanded and personnel increased to provide more immediate check on materials involved in construction to the district engineer and resident engineer as well as to headquarters offices. Assistant construction engineers were appointed and assigned on a district basis to assist in project supervision. Rewriting of the Standard Specifications begun in the previous biennial period was completed and became effective in September 1968. Division personnel continued to update the construction manual. Field office documentation procedures were standardized and part one of a documentation manual prepared.

Consideration of permanent duty stations for field crews and resident engineers was studied and recommendations presented for adoption. The first assignments under this new procedure will be made in 1969.

With the advent of landscaping as a major construction activity, a landscape specialist was added to the division headquarters staff. Field and office personnel received training in landscaping techniques and inspection procedures.

As a further refinement of the contract claims review system, the review board was altered in membership to include the assistant District II engineer. The board currently consists of 6 members, 2 of whom are construction personnel.

Construction of the State's largest interchange neared completion as the biennial period closed. The massive multi-decked structure joined Interstate 15 to the Downtown Expressway in Las Vegas. Despite its complexity, the $3.5 million project was being finished in record time.

Improving existing routes was a major part of the highway program in 1967 and 1968. One of the most important phases of this activity was the four-lane widening of U.S. 50 at Lake Tahoe. Only one section, from Glenbrook to Spooners junction, remains to be widened.

TESTING

Growth continued to be the pattern for the Department's materials and testing division. With a broader range of materials being used in highway construction and increasing project controls on the State and Federal level, the division had to expand its entire program. New people were added to the staff and several items of equipment purchased to handle the demand.

Record sampling of roadway and structural materials for federal approval is a major responsibility which typifies the expansion of testing activity. Four men have been assigned on a full-time basis to handle this one aspect of the program. In the past two men were assigned to sample subgrade material; now it requires three crews of two men each to perform this function. The same doubling of effort occurred in the personnel responsible for sampling gravel used in construction. Activity related to material deposits increased during the biennium to the point of requiring a man full-time to sketch, survey for quantity, and maintain test records for the deposits.

The asphalt paving design section enlarged its staff as need for testing increased in that area. Research was greatly accelerated on the use of various additives to the base and surfacing materials, such as lime, portland cement, etc. Study also was undertaken and is being continued on more

With the acquisition of new equipment, the chemical analysis lab became one of the finest in this region. Research developed methods that reduced testing times from days to hours.

Training field testers was a major responsibility of the testing division. Classes were given in district labs throughout the State by testing and construction personnel.

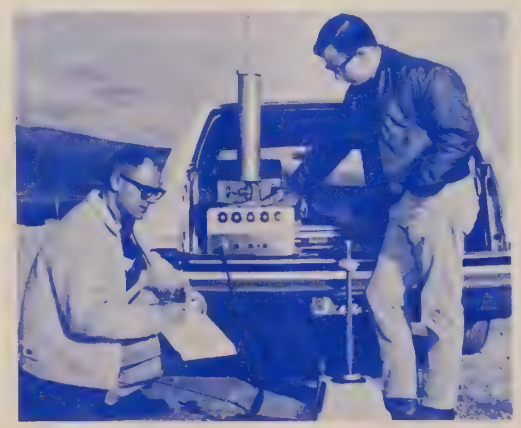
Quality control on soils and aggregates used in construction had priority in the testing program. Studies were continued to develop more rapid means of field testing such materials.

With the use of concrete for structures and paving growing, testing personnel and facilities were increased. Means were sought to provide faster checking of quality and strength.

Through the modification of semi-truck trailers, modern mobile labs were provided to house testing facilities on each contract. This greatly decreased field testing times.

Research was accelerated to find means of increasing strength of asphalt pavement. Failures in surface material have been occurring more frequently as traffic and loads increase.

The accuracy of on-the-job tests improved noticeably as new equipment and better training was provided. Procedures were initiated to standardize field testing methods.



Space-age technology is aiding the highway program through the development of nuclear testing devices. These instruments permit rapid testing of compaction and moisture content.

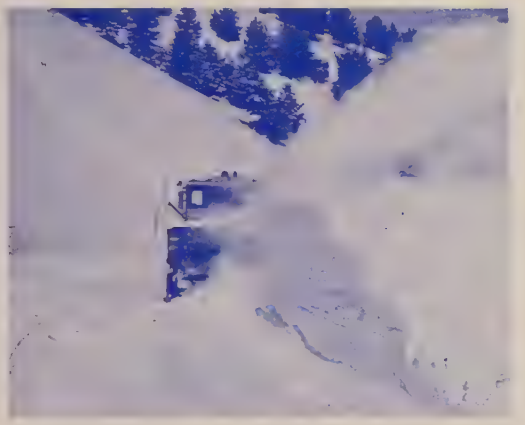
rapid methods of testing compaction of various roadway components during construction, using nuclear devices.

New equipment was installed to check compression, shear, consolidation, and permeability of various soils. A test to evaluate the ability of gravels to withstand wear from traffic, and deterioration from oxidation, wetting, and drying was developed. Improved instruments were obtained to more rapidly check the amount of asphalt used and the gradation of gravel in roadmix and plantmix paving materials.

Modernization and expansion of the chemical testing facilities reduced times for obtaining test results from days to hours. A Leco Carbon and Sulfur Determinator was acquired for rapid and accurate analysis of steel and other alloys used in construction. Equipment was installed to permit detailed evaluation of paints and related materials. A new method developed for the determination of cement content in cement treated base material is being considered by the American Society for Testing and Materials for national adoption and was presented to the national Highway Research Board.

Completion of the pending addition to the laboratory building is scheduled for 1969. With installation of several new instruments at that time the Nevada highway testing facility will be one of the best equipped in the western region.

MAINTENANCE



The largest single item of expense in recent years has been snow removal and ice control. During the biennium, despite relatively mild winters, nearly $1.5 million was spent.

During the summer months, litter pickup keeps the maintenance personnel busy. It is costing the State some $350,000 per year to keep the highways clean.

Removing snow from the highways is only part of the job for "bare pavement" winter maintenance. Continual sanding is needed during storms to keep the roads passable.

With the growing emphasis on highway safety, signing is becoming a primary concern of the Department. Over $200,000 is spent yearly for maintenance and repair.

Increased traffic services, safety improvements, litter pickup, vandalism, and additions and betterments all combined to keep maintenance costs at record levels during the biennium. During the 1967 fiscal year more than $5.5 million was spent, and during the 1968 period some $6.1 million was expended for maintaining 4827 miles of State highway. The average per mile cost reached its highest level in Department history during this most recent fiscal period.

Nearly $3 million was spent on motorist services which included repairs to signs and safety devices, repairs to guide posts, lane and center striping, guard rail maintenance, lighting, maintenance of roadside rests, pedestrian crossing marking, and patrolling for public safety. Another major item was removal of debris with cost in excess of $600,000 during the past two years. Snow and ice control despite two rather mild winters amounted to nearly $1.5 million, a record high.

For the first time the Highway Department awarded several major maintenance contracts. State highway funds only were used to resurface U.S. 40 from Lawtons Hot Springs to Vine street in Reno, U.S. 50 from Carson City east, State Route 51 in Pine Valley, U.S. 50 over Robinson Summit, and U.S. 395 from Reno Hot Springs to south of Washoe City. More than $1.8 million was allocated for these projects.

Emphasized this past biennium was a program of roadside landscaping maintenance. Although some work was done during the 1965–66 biennial period, activity more than tripled in 1967 and 1968. Nearly $74,000 was expended in the past 2 fiscal years compared to less than $23,000 during the previous biennium. Accompanying this increase in activity was initiation of a landscape training program for maintenance personnel in the various districts and establishment of landscape maintenance positions.

Reflecting Department-wide attention on highway safety improvements, the maintenance program included several widening projects, installation of left-turn storage lanes, backslope flattening, fill widening, and other spot changes.

Capital improvements were made to maintenance facilities in northern and eastern Nevada. An equipment parts storage building was erected in the East Ely yard; a heated and insulated sand storage tank was installed on U.S. 93 at Connors Pass; equipment storage buildings were built in Battle Mountain; a laboratory building was placed under contract in Elko; and equipment storage sheds and a gas house were constructed in Wells. Plans were completed and a contract prepared for a new station at Cold Springs on the recently constructed and relocated section of U.S. 50 between Middlegate and Austin.

Road life is being considerably extended by such maintenance activities as sealing and sanding. These treatments also improve the skid-resistance quality of the highway surface.

Immediate and proper patching is the secret of successful highway maintenance. New methods and equipment are improving this vital activity, making repairs faster and more effective.

Resurfacing is a means used to prolong the life of older sections of the highway system. More of this is needed as lack of federal funds postpones reconstruction.

Maintenance facilities were expanded with new buildings erected in East Ely, Battle Mountain, Elko, and Wells. Improvements will continue as the Department upgrades its program.

EQUIPMENT

Hundreds of thousands of dollars are spent annually to insure the best equipment maintenance possible. At the same time, constant effort is being made to reduce operating costs through modernization and improved procedures. Typifying this achievement is the equipment division shop in Sparks. It handles everything from a tire change to a major engine overhaul.

Decentralization is the trend in the equipment division as new sub-shops were established during the biennium in Fallon and Wells. These well-equipped facilities will speed repairs and reduce travel time formerly necessary from district shops in Reno and Elko.

During the biennium, the equipment division initiated several programs to increase efficiency and economy of operation. New equipment, coupled with decentralization and research, kept increases to a minimum despite upward trends in salaries and cost of equipment and parts.

Reduction in operating costs was realized through the conversion to fully hydraulic-operated sanders on snow removal units. Better control of the sand and fewer mechanical problems also resulted. Savings were achieved through reduced material and handling costs in purchasing traffic striping paint.

Sub-shops for equipment maintenance were established at Fallon and Wells maintenance stations. These new facilities speeded equipment repair and sharply reduced travel time and expense for mechanics who formerly had to commute from district shops in Reno and Elko.

In a study of possible future savings, the division conducted preliminary tests on the use of tungsten carbide tips for snow plow blades. Research will continue during the 1969–70 biennium to evaluate the cost benefits that may be derived from the longer wear life of the tungsten tips.

To facilitate non-office equipment budgeting and purchasing of the various highway divisions and districts, procedures were revised in 1968 to make these activities a responsibility of the equipment division.

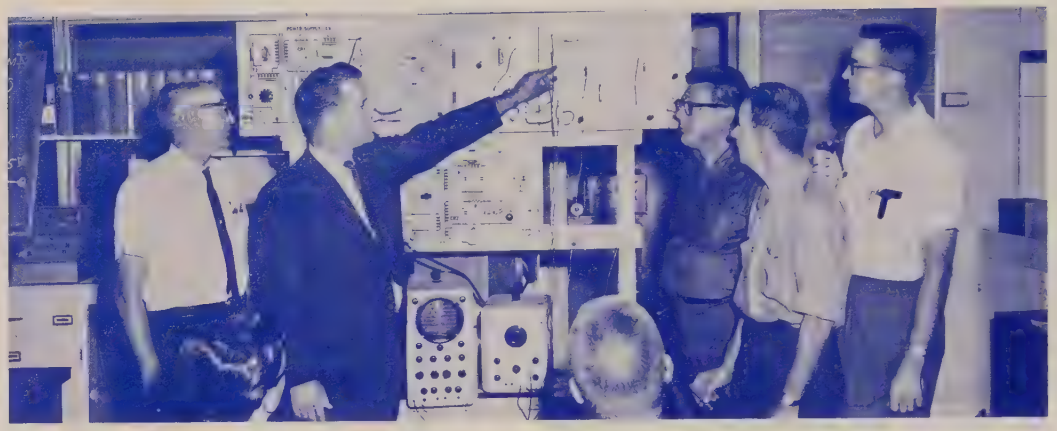
COMMUNICATIONS

In the past two years, several major improvements have been made in the highway communication system. In addition to the continuing changeover to solid-state mobile radio equipment; the program has featured an increase in mobile units, development of repeater sites, and expansion of road condition reporting.

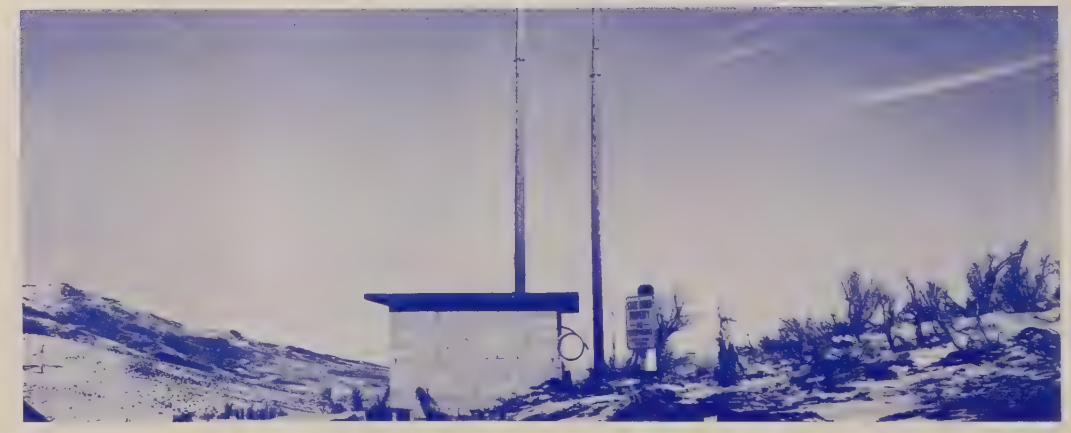
The modernization of vehicle radios and base stations was continued from the previous biennium. Currently, about 150 mobile units are solid-state and steps are being taken to change the remaining units as they need replacement. Approximately 15 percent of the base stations also were similarly modified and others will be as replacement is necessary. At the same time the mobile fleet radios were increased from 420 to 520 units.

New mountain-top repeater sites were activated or were being developed on Sober Peak between Las Vegas and Tonopah, on summits near Austin and Eureka, and on Highland Peak near Pioche. The Montezuma Peak site near Goldfield was developed in conjunction with the Highway Patrol. A five-channel, point-to-point system linking Carson City, Tonopah, and Las Vegas was nearing completion at the close of the biennial period.

Design of the State's first Emergency Calling System was completed. If approved by the Bureau of Public Roads, the system will be installed on Interstate 80 between Fernley and Lovelock.



Major improvements were made in the highway communication system with the continuing changeover to solid-state, transistorized, mobile radio equipment. Several schools were conducted at the radio shop in Sparks to instruct radio techs in maintenance and repair of the new units. Frequent modifications in the equipment is requiring continual training.



To increase the efficiency and range of the communications system, new mountain-top repeater sites were activated at several locations in central and eastern Nevada. Nearing completion as the biennial period closed was a network linking Carson City, Tonopah, and Las Vegas. These changes will improve the agency's service to the public.

SERVICES

With the growing complexity of the highway program, engineering activity increased its service demands during the biennium. The supporting divisions nearly all expanded the scope of their activities.

Recruitment of personnel for engineering positions continued to be difficult, particularly graduate civil engineers. Although there was a marked decrease in employee turnover from the previous biennial period, 472 employees terminated their employment with the Department.

Over 185,000 man-hours of in-service training were provided in nearly every facet of highway activity. Emphasis was given to instruction of field engineering, right-of-way, and maintenance personnel. A management training program for first-line supervisors and middle managers was developed. First graduates of the cooperative program with the University of Nevada Civil Engineering Department were hired. Rotational training for junior civil engineers was initiated and four completed the program.

A reduction in employee and equipment accidents resulted in more than $48,000 in insurance rebates. Equipment operator instructors, one in each district, were appointed to train field personnel in operation and maintenance procedures and to assist the Department safety director in

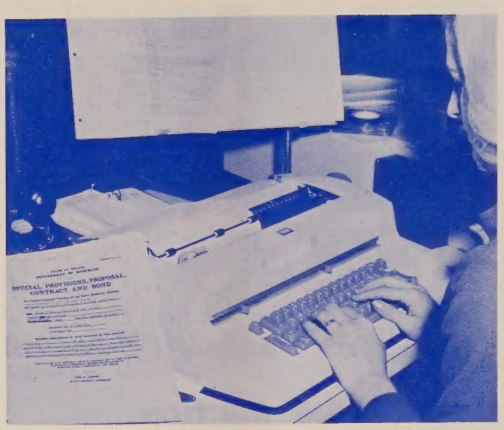
With the growing complexity of the highway program, the Department is increasing its emphasis on training. Over 185,000 hours of instruction was provided in the last two years.

Despite reduction in personnel, the accounting division maintained and improved its services to the agency. Several functions were automated through use of data processing.

Improved employee safety paid dividends in the past two years, as the Department realized more than $48,000 in insurance rebates and a reduction in NIC insurance rates.

Through the installation of new equipment, highway data processing greatly increased its capacity for handling information storage. All divisions broadened their use of the system.

Mail and files procedures were improved under direction of a new supervisor. Central files was established as a depository for records from every division and district.



Production by the administrative services division of contract special provisions was streamlined with the use of tape-operated typing machines. Preparation time was cut 60 percent.

Storekeeping and reproduction services were reorganized. A new stock numbering system was initiated, and printing activity was merged with planning's reproduction service.

Basic aim of agency public relations has been to get information to the local level. Particularly effective has been the annual meetings of highway and county officials.

accident investigations, inspections, and promotion of safety programs.

Stock control and services were improved. A stock numbering system was initiated and for the first time, a stock catalogue was issued. Reproduction activity of the storekeeping division was merged with that of the planning division.

Despite a reduction in personnel, accounting services were expanded through increased use of electronic data processing. Internal auditing procedures was refined and amplified during the past two years. The Bureau of Public Roads began accepting the Department audit program, materially reducing the need for external audits by this Federal agency.

A new data processing system was installed, providing greater capacity for information storage. With the improved equipment, it became possible to develop more sophisticated programs for design, traffic, accounting, and financial reporting.

Information activities were broadened with the assignment of an information officer to the northern Nevada districts. Coordination of public hearings became an information office responsibility. A special program to provide factual material to State and local officials concerned with highway activity was undertaken. Public relations training became a part of management instruction being given Department employees.

LOOKING

FINANCES

At no other time in recent highway history has the financial status of Federal highway funds been so critical and unsettled. Despite previous assurances of stability from the Federal level, there are strong indications of future cutbacks and freezes on allocations. Manipulation of the Highway Trust Fund for economic or other purposes has done, and it seems may continue to do, irreparable damage to the progress of the highway program.

Neither systematic planning of projects nor budgeting of funds has been possible for the past 12 months. Personnel management, to assure full use of available forces, has been equally difficult. If the unsettled situation continues, the program may become so chaotic that any type of organized approach to highway construction will become impossible.

However, Department administrators must continue to plan and organize activity on the basis of Federal-aid being restored to its normal level. Hopefully, within the next year, problems with trust fund financing will be solved and the program once more placed on an even keel.

CONTROLS

With the increasing complexity of activity and the growing public concern with expenditure of highway funds, the program is facing more stringent controls. These checks are developing at all governmental levels. Recent public resistance to certain aspects of the program, particularly in the more populous states, is resulting in greater Federal regulation as to the means used for location, design, and construction.

The Department itself is developing better means of supervising the various phases of roadbuilding. Testing and field checking is becoming more immediate and accurate.

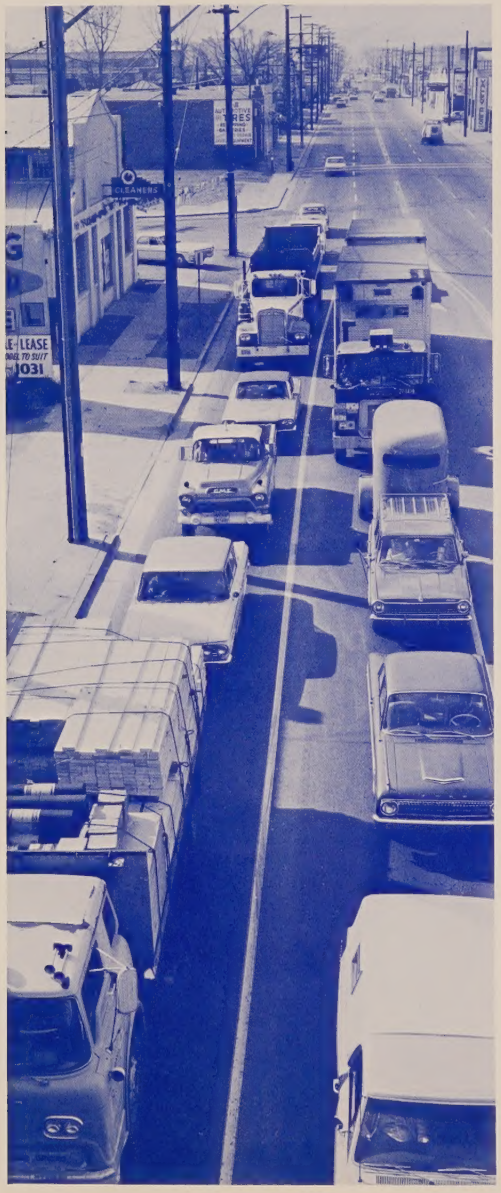
CONSTRUCTION

As the biennium closed there were over 300 miles of roadway projects on the design boards, costing more than $220 million. Based on previous expenditures, it will take 10 years to construct what is currently being designed. Sufficiency studies of highway capacity and condition reveal that 716 miles on the primary system and the secondary are in need of immediate reconstruction. In addition, over 130 miles of the Interstate must be built, and at least an equal number of miles of new primaries and secondaries will be needed in the next decade.

URBAN NEEDS

Emphasis in the future will be on meeting urban transportation needs. Freeways no longer will just be facilities for carrying inter-city and inter-state traffic. In the past two fiscal years, efforts began in that direction with the beginning of construction on the Downtown Expressway in Las Vegas and the North-South Freeway in Reno.

FORWARD



The Department revitalized and reorganized the urban transportation planning program. Coordination was reestablished with urban planning groups in the State's two major metropolitan areas. Field and office work were completed and a report issued on the Truckee Meadows Urban Transportation Study. Information was gathered and was being processed for a similar study on the Las Vegas Valley. A report on this area was scheduled for publication in 1969.

Hearings were held and planning begun on other urban traffic facilities. The Ring Road in the Reno-Sparks area was generally located and a contract finished on the first section. A future expressway is being considered to relieve mounting traffic congestion between Las Vegas and Boulder City.

MORE SERVICES

With highway improvement has come sophistication on the part of the motorist. To meet his needs, the Department must provide many more services. At the same time, higher traffic volumes and speeds are demanding improved safety features.

Roadside rests will be featuring not only tables, litter barrels, and water when available; but complete rest rooms, remadas, information centers, paved walkways and parking areas, landscaping, outdoor grills, and trailer discharge holding tanks. Provisions for overnight parking and camping also may be a consideration in the future. Emergency communications for stranded motorists is being planned. By either signal or voice contact, a driver needing assistance can ask for it by using roadside call boxes. The pilot project on this is slated for contract in 1969.

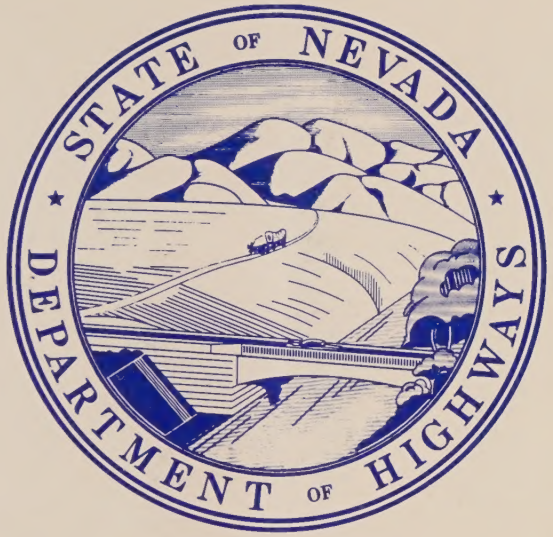
NEW CONCEPTS

Space-age technology is finding its way into highway planning and construction. Vast improvements in all areas of highway activity have been made in the past 10 years, but even greater changes can be expected.

Roads may be located and designed using only aerial photography and computors. Maps and plans will be drawn and printed electronically. Field surveys and engineering will make use of laser beams and other electronic devices. Field testing will rely on nuclear equipment to check compaction, moisture content, density, material types, and asphalt content.

Computor reports will provide highway administrators with almost instantaneous information on current finances, project progress, personnel status, and other vital aspects of the program. Through communication links, resident and district engineers at the local level will be able to use the full computing and information storage capabilities of the data processing division in Carson City.

Nineteen Sixty-Seven and Nineteen Sixty-Eight



SUPPLEMENT TO

TWENTY-SIXTH BIENNIAL REPORT

NEVADA DEPARTMENT OF HIGHWAYS

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